1. Give an unrestricted grammar for each of the following languages:

   (a) (5 points) \( L = \{a^n b^n c^n d^n : n \geq 0\} \). For example, \( \epsilon, abcdd, aabbccddd \in L \)

   (b) (5 points) \( L = \{a^{2n} : n \geq 0\} \). For example, \( a, aa, aaaa, aaaaaaaa \in L \)

2. Give a 1-counter machine for each of the following languages.

   (a) (5 points) \( L = \) all strings in \((a + b + c)^*\) that have the same number of as as bs.

      For example, \( abc, acbbac, bbbaaa \in L \)

   (b) (5 points) \( L = \{a^n b^{3n}\} \). For example, \( abbb, aabbbb \in L \)